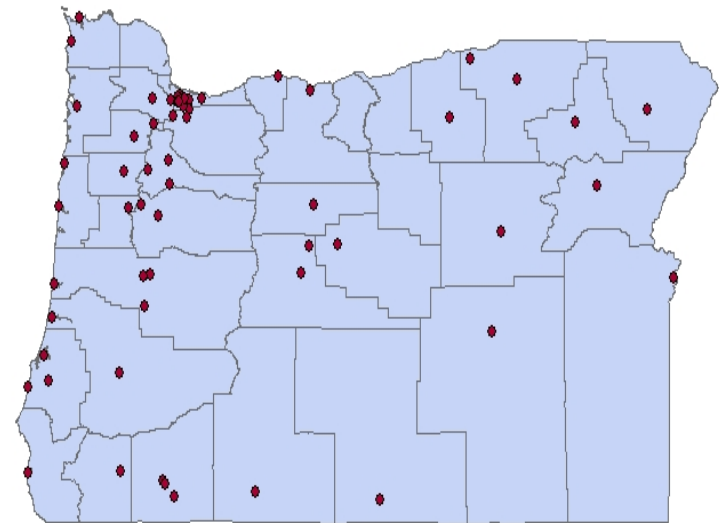


Oregon's eSentinel: a secure, flexible,
web-based reporting system designed for
infection control practitioners (ICPs) to
report cases of potential public health
importance

Walt Davis, System Architect
Stephen Ladd-Wilson, NEDSS Program Manager
Oregon Department of Human Services, Health
Services

Background

- Oregon: ~ 3.5 million
- 34 local health depts.
- 63 hospitals
- 89 infection control practitioners



Oregon Hospitals

Background con't

- Emerging Infections Program (EIP) maintained strong ties with Infection Control Practitioners (ICPs) since 1997; they've become some of our most reliable reporters
- August 2003: Need a Web-based reporting tool for ICPs should SARS recur
- Need it by Fall 2003

Methods

- Short timeline: One joint application development (JAD) session with 2 ICPs
- Top Needs
 - Simple, Secure data entry
 - Real time creation and modification of case definitions
 - State and locals need to know when data are entered or updated in system
 - Data easily downloaded, analyzed and imported into other, more robust systems
- Assumption: Design to augment, not to replace existing reporting system

Methods con't

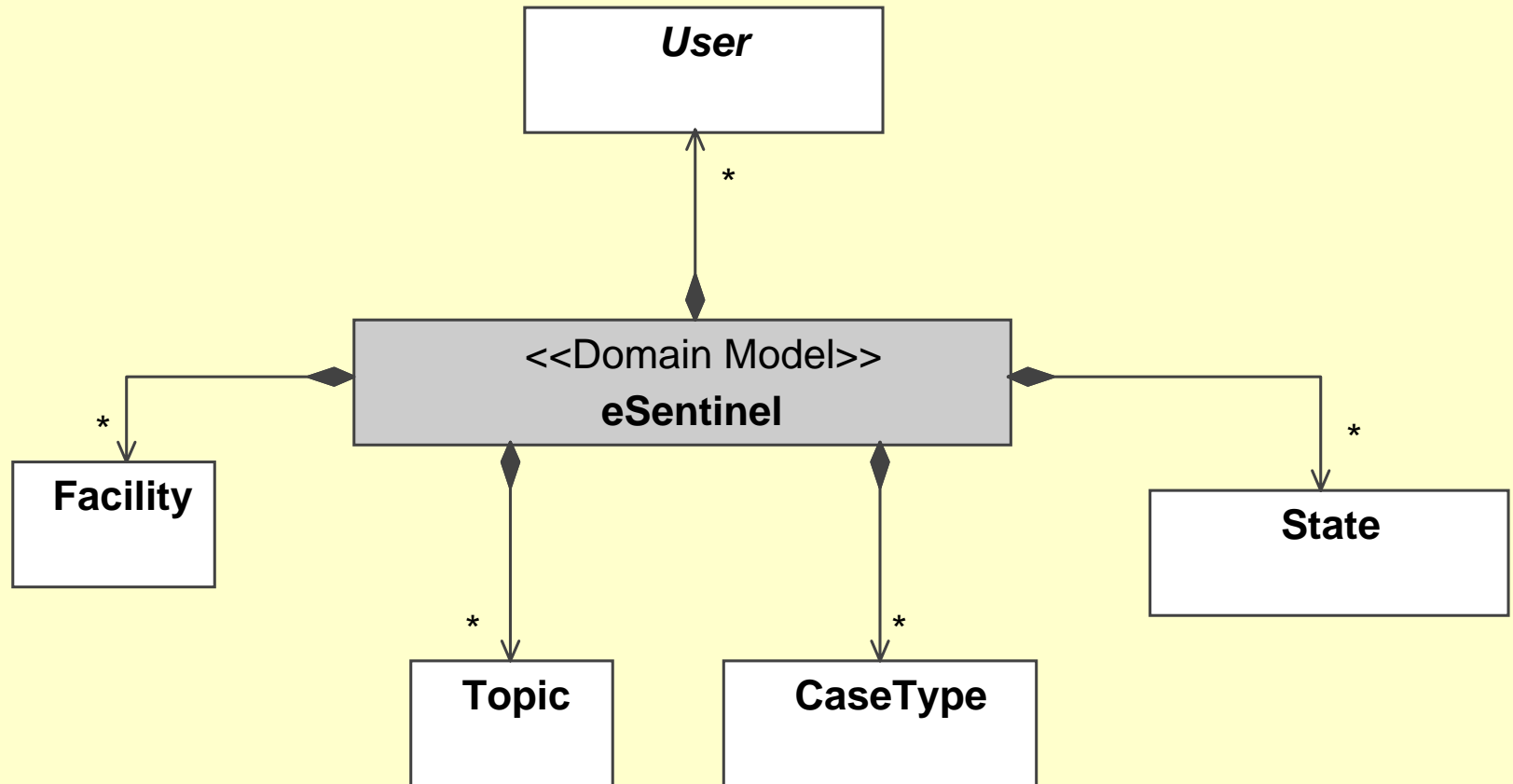
- Defined 3 case-types
 - Unexplained deaths or critical illnesses of potential infectious etiology among 6-month-49-yr-olds
 - Pediatric hospitalizations of influenza patients
 - Health-Care Workers (HCWs) admitted to hospital with pneumonia or influenza

Methods con't

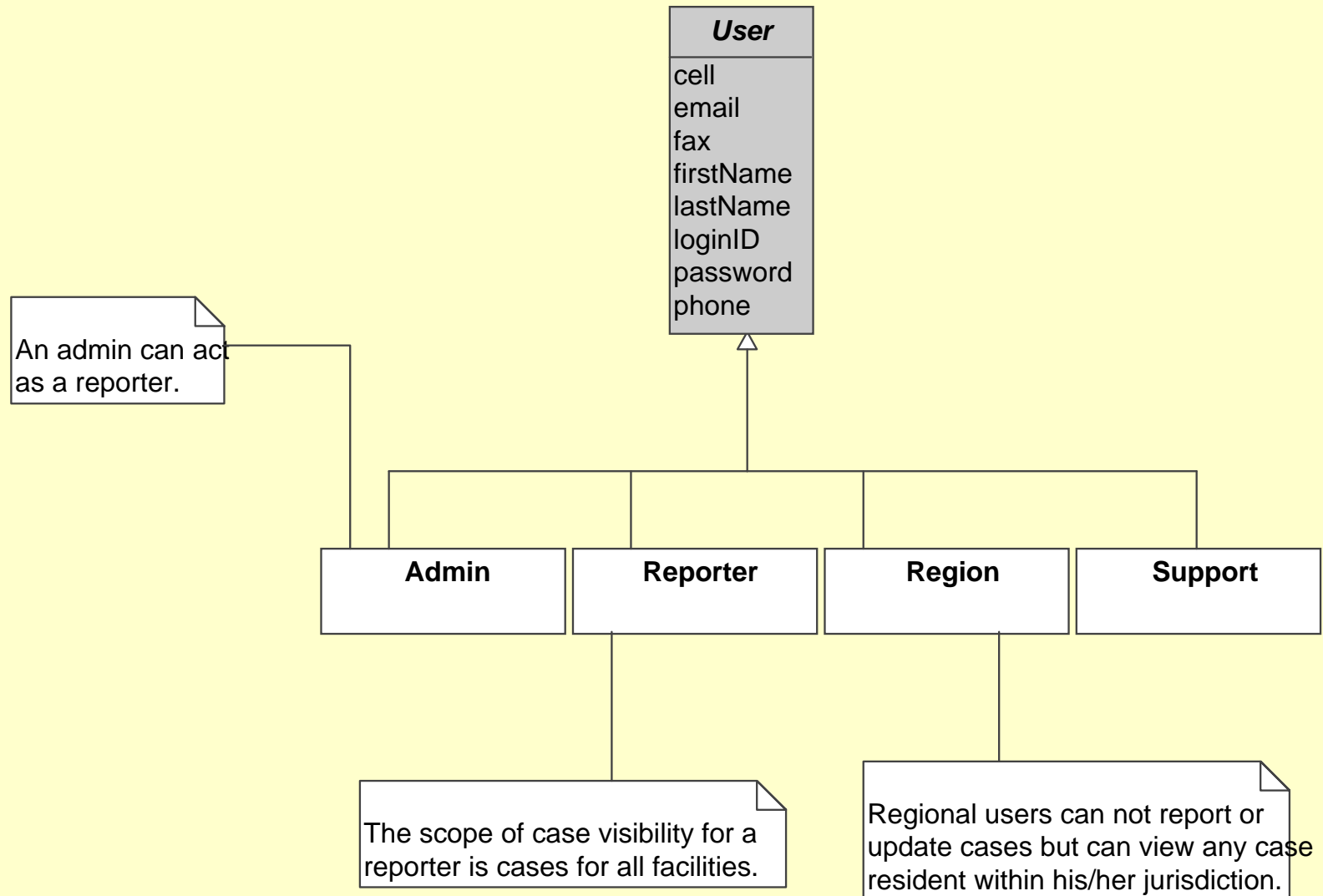
Technical Architecture

- JAVA
- Multi-layered, domain-centric
- Platform independent
- Open-source friendly

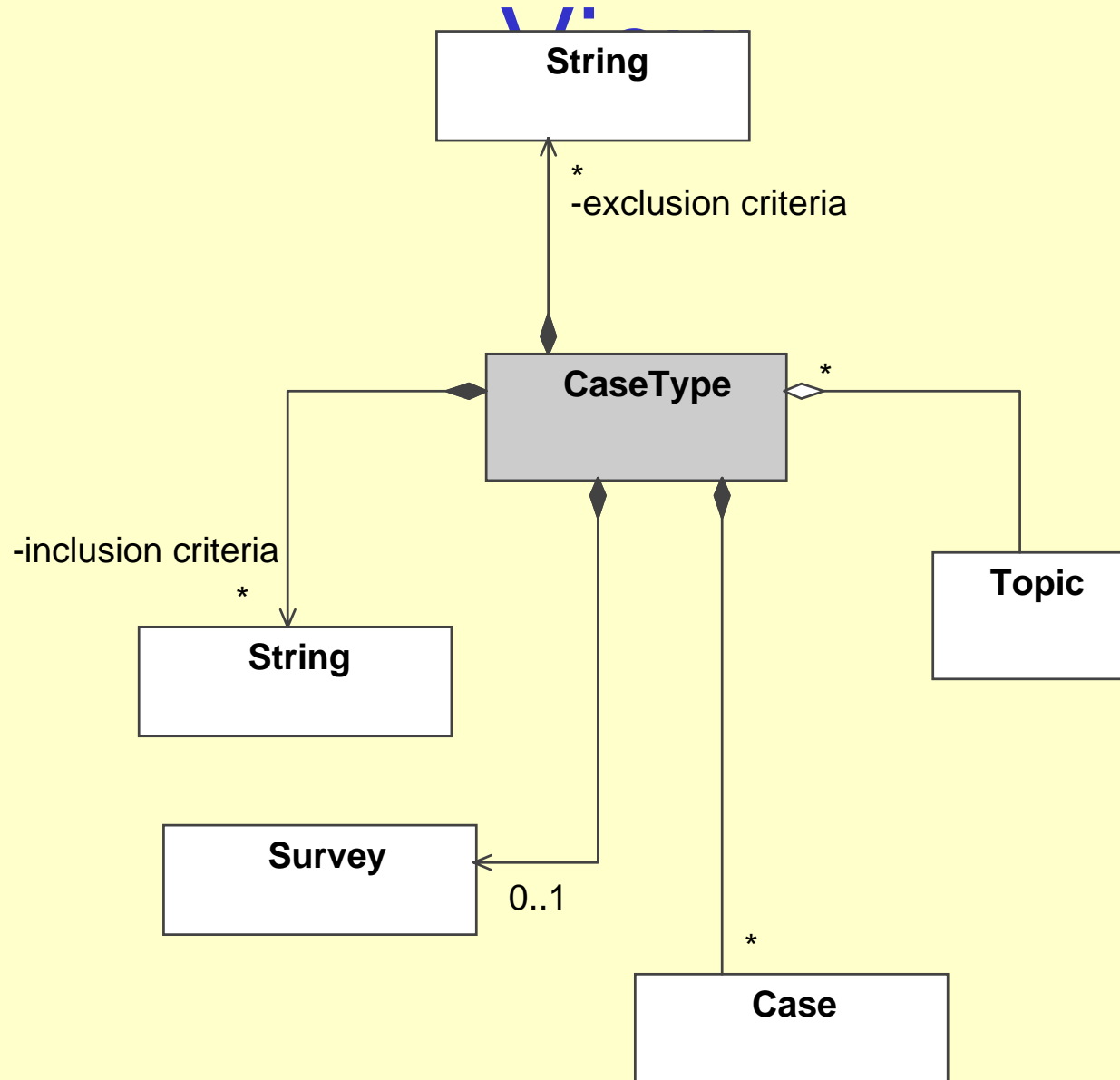
Domain Model - Overview



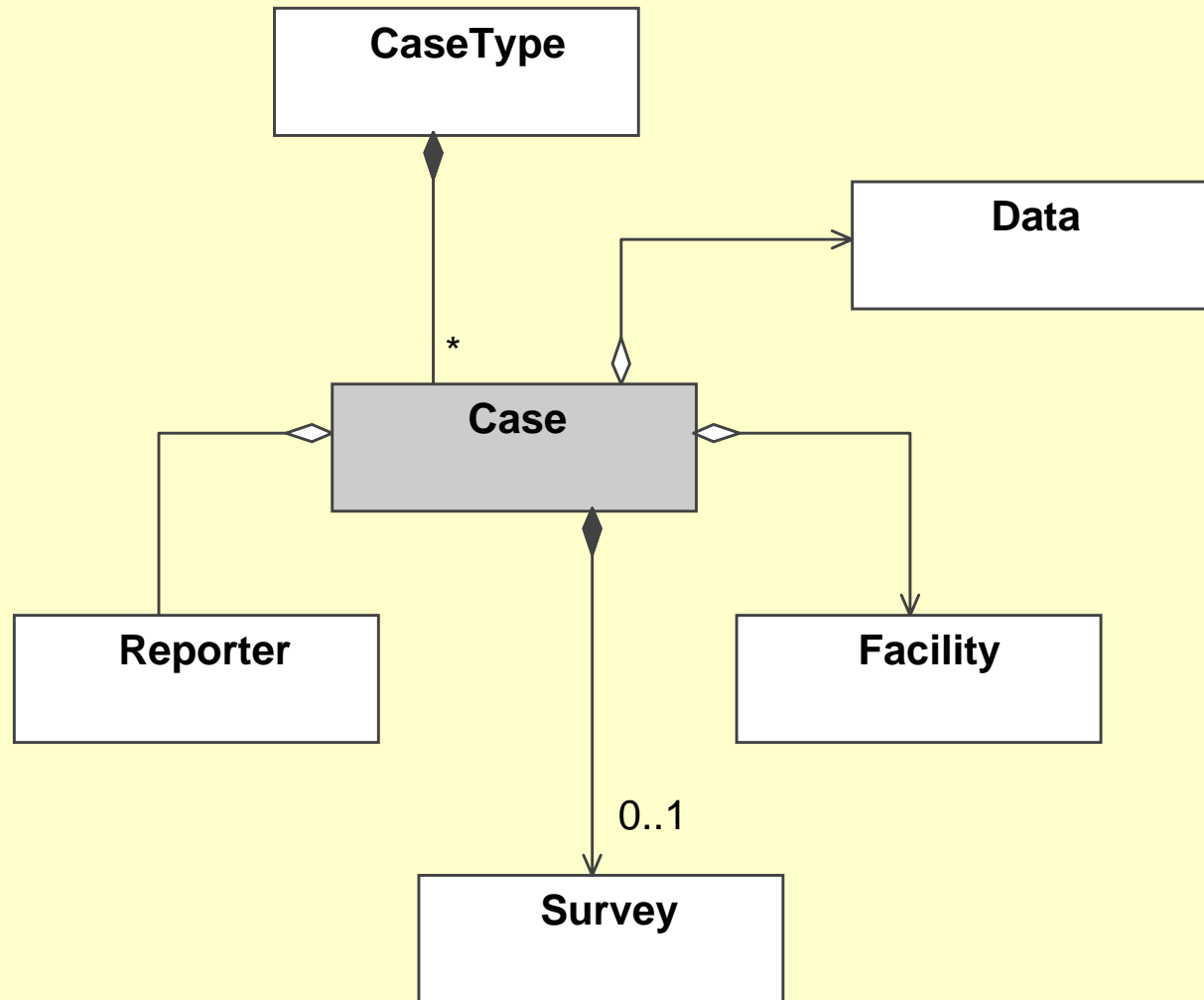
Domain Model – User View



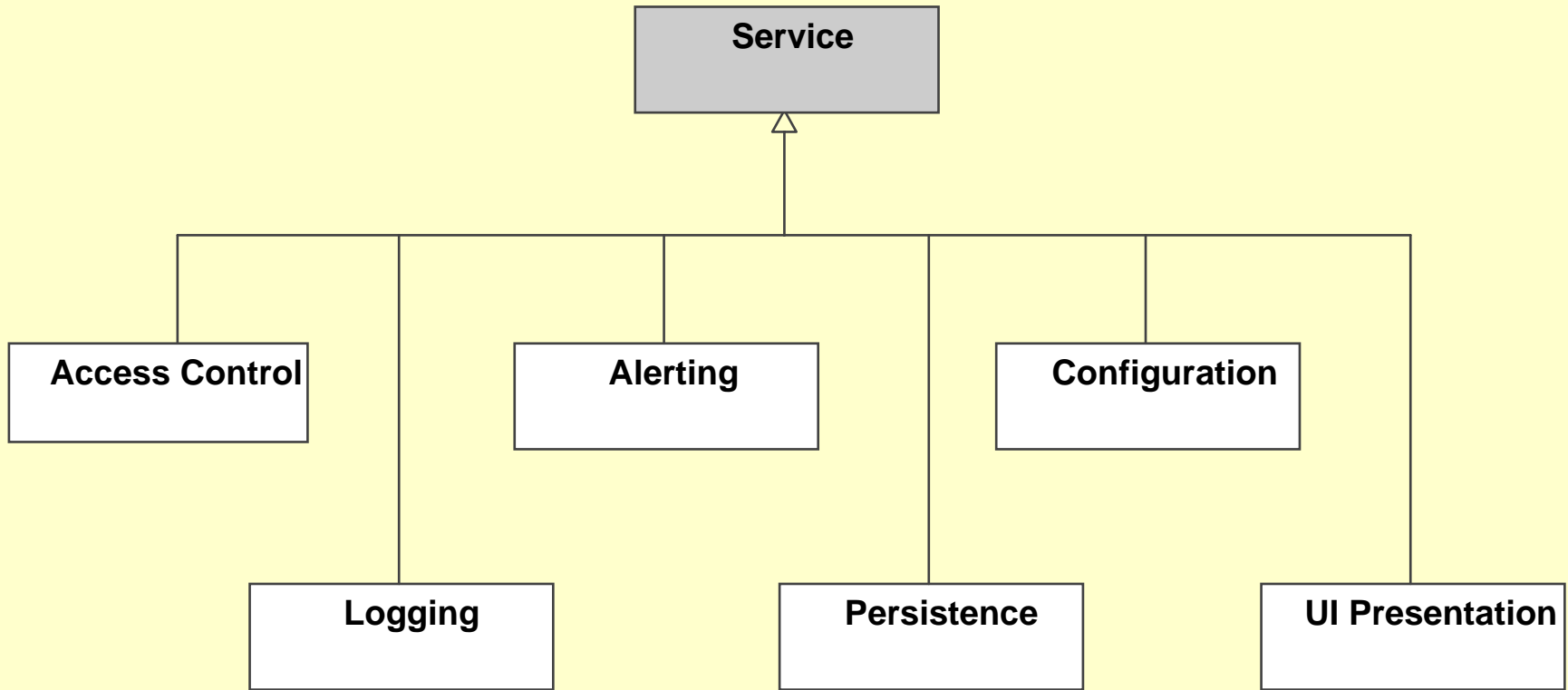
Domain Model – Case Type



Domain Model – Case View



Domain Model - Services




Results

- 3 full-time developers built eSentinel in 4 Months
- December 2003 through May 3, 2005
 - 215 total cases (residents of 19 counties)
 - 186 pediatric influenza hospitalizations
 - 19 unexplained critical illnesses or deaths
 - 10 HCWs with pneumonia or influenza
 - 24 (28%) of 85 ICPs have used eSentinel

Disclaimer

All screen-shots of case data are
fake

Home Page



Oregon Department of Health and Human Services

Reporting Cases of Potential Public Health Importance

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eSentinel
4.0

Administration


- Users
- Alerting


Cases


- Search
- Report
- Digest


Reporting

- Topics
- Case Types
- Facilities
- Regions










*Reporting Cases of
Potential
Public Health
Importance*

You have entered a secure "Early Event Detection" website for reporting cases of potential public health importance, which is required of clinicians by law ([Oregon Administrative Rules \(OARS\) Chapter 333, Division 18](#)).

Logon Page

**Oregon Department of Health and Human Services**
Reporting Cases of Potential Public Health Importance

eSentinel
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*A secure,
Flexible, Web-
based Reporting
System
Designed for
Infection Control
Practitioners
(ICPs) to Report
Cases of
Potential Public
Health
Importance.*

Access

Logon

Surveillance Administration

Regional Surveillance

Infection Control


Application Support

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User Name

Password


Logon



You have entered a secure "Early Event Detection" website for reporting cases of potential public health importance, which is required of clinicians by law ([Oregon Administrative Rules \(OARS\) Chapter 333, Division 18](#)).



Alerting

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- Case Types
- Facilities
- Regions

Case Notification Recipients

Walt.L.Davis@state.or.us

Contact Recipients

Walt.L.Davis@state.or.us

Error Report Recipients

Walt.L.Davis@state.or.us

User Management Page

 Oregon Department of Health and Human Services
Reporting Cases of Potential Public Health Importance

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Users

[Davis, Debi E](#)
[Frank, Nancy N](#)
[Hail, Joe N](#)
[Kline, Susan R](#)
[Larson, Harry N](#)
[Malone, Scott N](#)
[McDonald, Jeff N](#)
[Pee, Bob G](#)
[Wilson, Mike A](#)
[reporter, test](#)
[reporter, test2](#)

User ID

Acct Type
☐ Admin ☐ Region ☐ Reporter ☐ Support
☒ Unassigned

Title

First Name Last Name MI

Work Phone Cell FAX

Home Phone Pager


eMail Address

Description/Info




User Filters

☐ admins ☐ support
☒ reporters ☐ unassigned
☐ regions

Search

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Red fields are case ignore matches that contain the specified string and all other fields are case ignore exact string matches.

Case Number


Basic

<i>Admit Date (MMM-DD-YYYY)</i>	<i>Med Rec ID</i>
<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/>
<i>Last Name</i>	<i>First Name</i>
<input type="text"/>	<input type="text"/>
<i>Age</i>	<i>DOB (MMM-DD-YYYY)</i>
<input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
<i>Gender</i>	<input type="button" value="Search"/> <input type="button" value="Reset"/> <input type="button" value="Clear"/>
<input type="radio"/> F <input type="radio"/> M <input type="radio"/> Unknown	

Extended

<i>State</i>	<i>County</i>
<input type="text"/>	<input type="text"/>
<i>Facility</i>	<i>Topic</i>
<input type="text"/>	<input type="text"/>
<i>Reporter Name</i>	<i>Case Type</i>
<input type="text"/>	<input type="text"/>
	<input type="button" value="Search"/> <input type="button" value="Reset"/> <input type="button" value="Clear"/>

Search for influenza cases

**Oregon Department of Health and Human Services**
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- Regions

Red fields are case ignore matches that contain the specified string and all other fields are case ignore exact string matches.

Case Number Search Reset Clear


Basic

<i>Admit Date (MMM-DD-YYYY)</i> <input type="text"/> <input type="text"/> <input type="text"/>	<i>Med Rec ID</i> <input type="text"/>
<i>Last Name</i> <input type="text"/>	<i>First Name</i> <input type="text"/>
<i>Age</i> <input type="text"/> <i>Units</i> <input type="text"/>	<i>DOB (MMM-DD-YYYY)</i> <input type="text"/> <input type="text"/> <input type="text"/>
<i>Gender</i> <input type="radio"/> F <input type="radio"/> M <input type="radio"/> Unknown	Search Reset Clear

Extended

<i>State</i> <input type="text"/> OR	<i>County</i> <input type="text"/>
<i>Facility</i> <input type="text"/>	<i>Topic</i> <input type="text"/> Influenza
<i>Reporter Name</i> <input type="text"/>	<i>Case Type</i> <input type="text"/>
Search Reset Clear	

Influenza search results



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Action	Case	Admit Date	Submission Date	Last Name	First Name	Med Rec Num	DOB
	01000	01/08/2005	01/16/2005	Hogencamp	Jacky	23456732	11/12/1985
	01001	01/17/2005	01/24/2005	Moua	Jason	77658834	04/24/1962
	01002	09/04/2004	09/15/2004	Rice	John	22554437	07/18/1969
	01004	04/30/2004	05/02/2004	Walker	Cole	467824-23-56	07/18/1986
	01005	06/13/2004	06/14/2004	Tyler	Timothy	23834-44-23	02/10/1960
	01006	10/08/2004	10/09/2004	Whealer	Jason	34682357	06/14/1977
	01007	09/05/2004	09/06/2004	Thorne	Robert	235887-24-28	04/07/2003
	01008	07/26/2004	07/25/2004	Crown	Betty	478293	06/27/1989
	01009	01/31/2004	02/01/2004	Peterson	Julie	23456324	10/06/1945
	01010	01/28/2004	02/01/2004	Morgan	Jenny	45324568	10/12/1967
	01011	07/17/2004	07/18/2004	Whisppen	Kate	78523042	09/01/1956
	01012	04/19/2004	04/19/2004	Brown	Melissa	23745679	06/24/1949

1 to 12 (32 total)

Previous | [Next](#) | 1 [2](#) [3](#) | [Show All](#)

New Search

Export Case Data

Sorting found set

Address <https://dhs-web3.hr.state.or.us/eSentinel/admin?page=SearchResults>

Canon Easy-WebPrint Print High Speed Print Preview Options View Print List

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Oregon Dis

phin

Action	Case	Admit Date	Submission Date	Last Name	First Name	Med Rec Num	DOB
	01009	01/31/2004	02/01/2004	Peterson	Julie	23456324	10/06/1945
	01010	01/28/2004	02/01/2004	Morgan	Jenny	45324568	10/12/1967
	01011	07/17/2004	07/18/2004	Whisppen	Kate	78523042	09/01/1956
	01012	04/19/2004	04/19/2004	Brown	Melissa	23745679	06/24/1949
	01013	09/23/2004	09/23/2004	Brown	Bryan	22233-233-2333	10/22/1967
	01014	11/18/2004	11/19/2004	Becker	Cindy	78833423	03/16/1969
	01015	01/06/2005	01/06/2005	Fletcher	Bob	78833423	07/08/1969
	01016	06/01/1004	06/06/2004	Anderson	Holly	23597345	04/11/1999
	01017	10/18/2004	10/18/2004	Williams	Matt	128467832	04/16/2002
	01018	02/08/2004	02/08/2004	Freeman	Wendy	09263542	11/12/2003
	01019	10/11/1004	10/12/2004	Easyheart	Dunken	93039673	06/03/1995
	01020	04/09/2003	04/09/2003	Davis	Kristy	43882345	02/08/2001
	01021	04/25/2005	07/25/2004	Test	Case	51573352	04/25/2005

All these fields are sortable

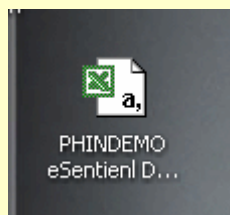
Exporting/analyzing found set

✖	📄	✍	01033	04/25/2005	07/25/2004	Test	Case	51575941	04/25/2005
✖	📄	✍	01035	04/25/2005	07/25/2004	Test	Case	51576364	04/25/2005

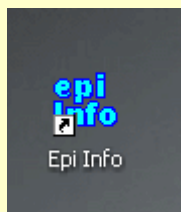
1 to 25 (358 total)

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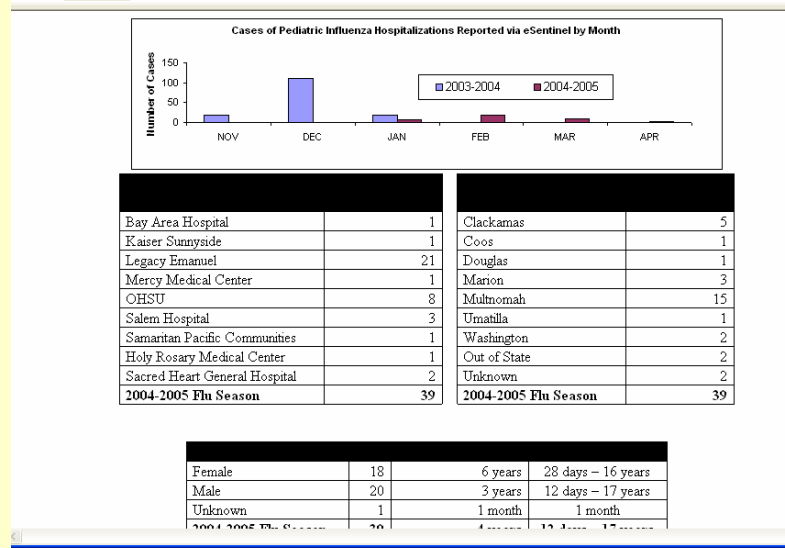
[New Search](#) [Export Case Data](#)




Microsoft Excel Comma Separated Values File






Analytical program



View Case Page


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Case Type <u>Healthcare worker admitted to hospital with pneumonia or influenza</u>			Case ID 01012
Facility	Name and Address <u>Adventist Medical Center</u> 10123 SE Market Street Portland, OR 97216 Multnomah County	Rm/Loc PPMC	Reporter <u>Wilson, Mike A</u> 541-333-4444 503-333-4444 FAX mwilson.esentinal@state.or.us
Submission	Date 04/19/2004	Time 10:51 AM	
Patient	Admit Date 04/19/2004	Med Rec ID 23745679	Diagnosis/Chief Complaint Pneumonia/AR
Demographics	Last Name Brown	First Melissa	Middle Initial H
	Age Units 59 Years	DOB 06/24/1949	Gender female
Residence	State OR	County Hood River	Zip Code 97031
Employer	Name Adventist Medical Center	State OR	County Multnomah
			Zip Code 97210
Exposure History and Other Comments <p>Initially admitted with Asthma Exacerbation & Pancreatic CA. Admitted with Atypical pneumonia. History of smoking 1-2 packs/week. Does take Octreotide for Pancreatic CA (monthly). Has been on ventilator since admission. On the Friday, March 16th, prior to admission stopped by office to ask me about a rash on her wrist. Wanted to know if it might be 'scabies'. It did not itch, and was only on left wrist area. Looked more like a scabed scratches from working in the garden. She indicated she had been in the garden. I did notice her breathing was not easy, the type of breathing associated with COPD.</p>			

<<prev Edit Print Delete Search Results next>>




Reporting Cases

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Case Type

Reporter
Davis, Debi E
41-333-4444
Fax: 503-333-4444
ddavis.esentinel@state.or.us

Submission

Date May 4 2005 Time 34:34 ☐ AM ☒ PM Diagnosis/Chief Complaint

Demographics

Admit Date May 4 2005 Med Rec ID

Last Name First Name Middle Initial

Age Units Days DOB Gender ☐ F ☐ M ☒ Unknown

Residence

State OR County Zip

Employer

Name

State OR County Zip

Exposure History and Other Comments

Report/Update Case Page

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Case Type
Unexplained critical illness or death of previously healthy person

Facility

Name	Rm/Loc	Reporter
10123 SE Market Street Portland, OR 97216 Multnomah County		541-333-4444 Fax: 503-333-4444 mwilson.esentinel@state.or.us

Submission

Date	Time	Diagnosis/Chief Complaint
Jan 16 2005	03 : 03 AM	AR

Demographics

Admit Date Jan 8 2005	Med Rec ID 23456732	
Last Name Hogencamp	First Name Jacky	Middle Initial L
Age 12	Units Years	DOB Nov 12 1985
		Gender <input checked="" type="radio"/> F <input type="radio"/> M <input type="radio"/> Unknown

Residence

State OR	County Baker
Zip 	

Employer

Name 	
State 	County
Zip 	

Exposure History and Other Comments

admitted w/resp distress after few days prodrome, This case is part of a household cluster (dad was sick with same sx, sibling hospitalized in portland adventist, mom at home feeling sick)...this case currently is on vent...all viral and Legionella testing neg....more to follow...

Update
Cancel

Print Case Page

https://dhs-web3.hr.state.or.us - eSentinel (Pr...)

Oregon Department of Human Services
Reporting Potential Cases of Public Health Importance

Case Type **Case ID**
 Unexplained critical illness or death of previously healthy person 01000

Facility	Name and Address	Location	Reporter
	Adventist Medical Center		Wilson, Mike A
	10123 SE Market Street		541-333-4444
	Portland, OR 97216		503-333-4444 FAX
	Multnomah County		mwilson.esentinel@state.or.us

Submission	Date	Time
	01/16/2005	03:03 AM

Patient	Admit Date	Med Rec ID	Diagnosis/Chief Complaint
	01/08/2005	23456732	AR

Demographics	Last Name	First	Middle Initial
	Hogencamp	Jacky	L

	Age Units	DOB	Gender
	12 Years	11/12/1985	female


Residence	State	County	Zip Code
	OR	Baker	

Employer	Name	State	County	Zip Code

Exposure History and Other Comments
 admitted w/resp distress after few days prodrome, This case is part of a household cluster (dad was sick with same sx, sibling hospitalized in portland adventist, mom at home feeling sick)...this case currently is on vent...all viral and Legionella testing neg....more to follow...

Done Internet

Digest Page



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Summary

States (52)	
Alabama	11
Alaska	7
Arizona	12
Arkansas	12
California	8

State Detail (Oregon)

Topics (4)	
Influenza	6
SARS	11
Test topic Y	2
Unexplained Critical Illness or Death	12

Case Types (4)	
Healthcare worker admitted to hospital with pneumonia or influenza	11
Influenza-related hospitalizations in children	6
Unexplained critical illness or death of previously healthy person	12
case type for topic Y	2

Counties (17)	
---------------	--

Topics

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Topics
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SARS
Test topic Y
Test topic 1
Test topic X
Unexplained Critical Illness or Death

Topic

Oregon DIS
phin
CDC

Case types



Oregon Department of Health and Human Services

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Case Types

Healthcare worker admitted to hospital with pneumonia or influenza
Influenza-related hospitalizations in children
Unexplained critical illness or death of previously healthy person
case type 2 for topic Y
case type for topic Y

Types For All Topics

Topic Influenza

Case Type Influenza-related hospitalizations in children

New Rename Delete Cases

Type is active and cases can be reported!

Disable Reporting

Inclusions

< 18 years old
Lab evidence of influenza by at least...
Oregon resident

Exclusions

Fetus < 20 weeks gestation
Initial hospital admission > 14 days ...

Cases for this type have been reported and the criteria can no longer be changed!

Facilities

Oregon Department of Health and Human Services
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[Columbia Memorial Hospital](#)
[Kaiser Sunnyside Medical Center](#)
[Legacy Emanuel Hosp & Health Center](#)
[Legacy Good Samaritan Hospital](#)
[Oregon Health and Sciences Univers...](#)
[Providence Milwaukie Hospital](#)
[Providence Portland Medical Center](#)
[St. Charles Medical Center](#)
[Test facility](#)

Name

Street

City

State County Zip

← Facilities For



Regions

Oregon Department of Health and Human Services
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Regional Surveillance

User
Strait, Jessie B


State
Oregon

Counties

Available		Selected
Baker		Grant
Benton		Harney
Clackamas		Hood River
Clatsop		Jackson
Columbia		Jefferson
Coos		Josephine
Crook		Klamath
Curry		Lake
Deschutes		
Douglas	<<	
Gilliam		
Lane	>>	
Lincoln		
Linn		
Malheur		
Marion		
Morrow		
Multnomah		
Sherman		
Tillamook		






Logout



Oregon Department of Health and Human Services

Reporting Cases of Potential Public Health Importance

Access 

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eSentinel

4 ~ CREDITS ~

Created by the State of
Oregon Department of
Health and Human
Services!

Architect
Walt Davis

Program Manager
Stephen Ladd-Wilson


Project Manger
Susan Strohm

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Walt Davis
David Oneill
Boris Shternerberg
John Reinhold
Tom Chen

Web Designer
Walt Davis

Test Engineers
Walt Davis
Boris Shternerberg

Systems
Gary Barr
Randi Loeb



Thank you for making Oregon a safer
place to live!

You have entered a secure "Early Event Detection" website for reporting
cases of potential public health importance, which is required of clinicians by
law ([Oregon Administrative Rules \(OARS\) Chapter 333, Division 18](#)).

Discussion

- eSentinel only works well with a dedicated group of reporters, such as ICPs
- eSentinel should work well in non-infectious scenarios



Discussion: Technical/Architectural Considerations

Hardware/Software Requirements

- LDAP: OpenLDAP, iPlanet, eDirectory, or SunOne
- Database: Any ANSI SQL Database or Local File System
- Java Virtual Machine 1.4
- An SMTP server
- Http server and Java servlet engine

Discussion: Technical/Architectural Considerations Con't

Community Source

- Collaborative effort among several states to continue development and maintenance of eSentinel
- A variant to open source that is more suitable to government efforts
- Preferred method for going forward

Discussion: Technical/Architectural Considerations Con't

Oregon Hosting

- Without Community Development possible to be done on a limited bases.
- Probably only feasible for adjacent states.
- Washington? Idaho?

Questions?

Technical

Walt Davis

503-878-2101 X240

Walt.L.Davis@state.or.us

Programmatic

Stephen Ladd-Wilson

503-731-4024

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